REMARKS

Claims 1 - 26 remain active in this application. Claims 1, 3, 16, 18, 19, 21, 22 and 24 have been amended to further emphasize the relative direction of transmission of signals and excitation energy. Support for the amendments of the claims is found throughout the application, particularly in Figures 1A - 1C and the description thereof on pages 15 - 17. No new matter has been introduced into the application. The withdrawal of previous grounds of rejection and the indication of allowability of the subject matter of claims 5 - 11, 13 - 15, 25 and 26 is noted with appreciation.

Claims 1, 3, 4, 16, 18, 19, 21, 22 and 24 have been rejected under 35 U.S.C. §102 as being anticipated by Mitsuda et al. and claims 2, 17, 20 and 23 and claim 12 (in a separate statement) have been rejected under 35 U.S.C. §103 as being unpatentable over Mitsuda et al. These grounds of rejection are respectfully traversed since Mitsuda et al., particularly in the embodiment of Figure 10 (the only embodiment the Examiner seeks to apply against the claims) simply does not contain the teachings or suggestions the Examiner attributes to it.

Mitsuda et al. is directed to amplification of optical signals of different wavelength with an erbium-doped fiber and addresses the problem of the gain of the optical amplifier being different for different respective wavelengths due to the strong wavelength dependency of erbium-doped optical fibers and the difference of power in digital and analog signals, respectively (column 1, lines 52 - 64). To achieve equal gains for different wavelengths, the basic principle of Mitsuda et al. is to separate the wavelengths at some point in the transmission and passes one of the wavelengths, together with the pump

radiation, through an additional length of erbium-doped optical fiber to produce additional gain.

Initially, it is respectfully pointed out that while the embodiment of Figure 10 (example 7) may provide bidirectional optical communication *as a system*, the discussion thereof in column 9 make it clear that the two wavelengths follow *separate* paths through the *transmission medium* except in the amplification path from WDM coupler 48 through isolator 25, WDM coupler 22 (where pump radiation is injected) and erbium-doped fiber 32 to WDM coupler 24 where the wavelengths are again separated and additional gain is provided to signal 53 and in this portion of the medium, ***signals of both wavelengths and the pump radiation are all travelling in the same direction***. Thus Mitsuda et al. fails to disclose even the most rudimentary element of the environment of the invention as recited in all independent claims.

Second, as pointed out above, Mitsuda et al. is concerned with *equalization of gains* for different wavelength signals in an optical amplifier and not, as in the invention, with the *compensation of attenuation* due to an effect which transfers energy from a signal of a shorter wavelength to another signal of longer wavelength; an effect which Mitsuda et al. does not appear to even recognize but which is described in some degree of detail in all independent claims of the present application. Therefore, Mitsuda et al. also fails to answer such recitations of the claims and has nothing to do with the effects addressed by the present invention, much less providing a solution thereto.

Third, the basic principle of Mitsuda et al. requires separation of signals of different wavelengths so that additional gain may be selectively and separately applied to the different signals in addition to the common amplification of the signals travelling in the same direction whereas the basic principle of

the present invention addresses effects occurring most deleteriously when signals are travelling in opposite directions and provides a solution in that environment. Therefore, any suggestion of modification of Mitsuda et al. to even approach answering the recitations of the claims would be improper since any such modification would prevent Mitsuda et al from operating in the intended manner. See In re Gordon, 221 USPQ 1125 (Fed. Circ., 1984).

Thus, particularly in regard to the embodiment of Mitsuda et al. applied by the Examiner, virtually the only commonality of Mitsuda et al. with the present invention is that the larger gain is applied to the shorter wavelength signal which appears to be principally an incident of the relative powers of digital and analog signals and the slight advantage to be gained by assigning the longer wavelength to the lower powered signal in view of the slightly greater gain available from the highly non-linear erbium-doped optical fiber; the gain characteristic for which is shown in Figure 2 of Mitsuda et al. The discussion of this assignment of wavelengths appears at column 4, lines 40 - 49. of Mitsuda et al. and, unlike the invention, has nothing to do with any *interaction* between the wavelengths or compensation for such effects which also relies on *interaction* of respective wavelengths in accordance with the invention.

Therefore, it is clearly seen that except for the nearly coincidental wavelengths of the first and second signals and the pump laser radiation, Mitsuda et al. does not teach or suggest any of the features of the invention recited in the claims. Mitsuda et al. clearly does not anticipate any claim since it does not disclose the environment (e.g. directions of respective signals) or optical effects (e.g. different attenuation due to transfer of energy between signals of respective wavelengths) of the invention as explicitly recited in

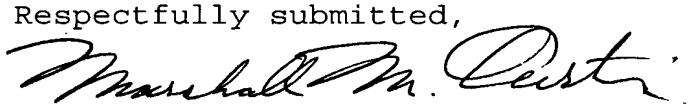
the claims. Moreover, the principles of operation are so divergent between mitsuda et al. and the present invention that Mitsuda et al. cannot be modified to even approach answering the recitations of the claims without precluding the operation of Mitsuda et al. in the manner intended. Mitsuda et al. simply does not contain the teachings or suggestions which the Examiner attributes to it and the Examiner's interpretation thereof, particularly in regard to example 7 is clearly in error in view of the description thereof in column 9 and even more plainly in error in view of the directionality of the optical isolators 25, 26 and 27 in Figure 10. Therefore, it is respectfully submitted that the Examiner has not made and cannot make a *prima facie* demonstration of either anticipation or obviousness of any claim in the application. Accordingly, all grounds of rejection based on Mitsuda et al. are clearly seen to be in error and untenable, particularly in view of the above amendments of the claims to repeat and emphasize the directions of transmission of the respective wavelengths. Therefore reconsideration and withdrawal of all grounds of rejection based on Mitsuda et al are respectfully requested.

Since all rejections, objections and requirements contained in the outstanding official action have been fully answered and shown to be in error and/or inapplicable to the present claims, it is respectfully submitted that reconsideration is now in order under the provisions of 37 C.F.R. §1.111(b) and such reconsideration is respectfully requested. Upon reconsideration, it is also respectfully submitted that this application is in condition for allowance and such action is therefore respectfully requested.

If an extension of time is required for this response to be considered as being timely filed, a conditional petition is hereby made for such extension

of time. Please charge any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041.

Respectfully submitted,



Marshall M. Curtis
Reg. No. 33,138

Whitham, Curtis & Christofferson, P. C.
11491 Sunset Hills Road, Suite 340
Reston, Virginia 20190

(703) 787-9400
Customer Number: **30743**